

**T'es COP ou pas CAP ? /  
To COP or not to COPE?**

**Sustainable Buildings & Cities Symposium**  
6<sup>th</sup> of March, SMA-BTP, Paris

# Operating experience



Living Places,  
Danish low-carbon housing

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Create well-being for  
people and planet  
by transforming  
spaces using daylight  
and fresh air





30+

Experiments

22

countries

20

years

100+

partners



# Living Places

More sustainable living environments for people and planet.

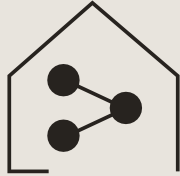
Living Places 2024

**Living  
Places  
Principles  
Description**



**Healthy  
principle**

Benefiting both people and planet, through the careful selection of materials, building techniques, utilities, and design configuration of indoor and outdoor spaces.



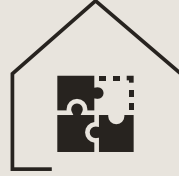
**Shared  
principle**

Strengthening the sense of community by combining private dwellings with shared spaces, resources, outdoor areas, and amenities.



**Simple  
principle**

Offering a simple modular building system that requires little to no maintenance and can easily be upgraded, repaired and fitted with smart appliances.



**Adaptive  
principle**

Creating a scalable solution that responds to the needs for more ways of living.



**Scalable  
principle**

By creating homes that challenge the way we design, plan, and finance homes we can unlock housing for the many.

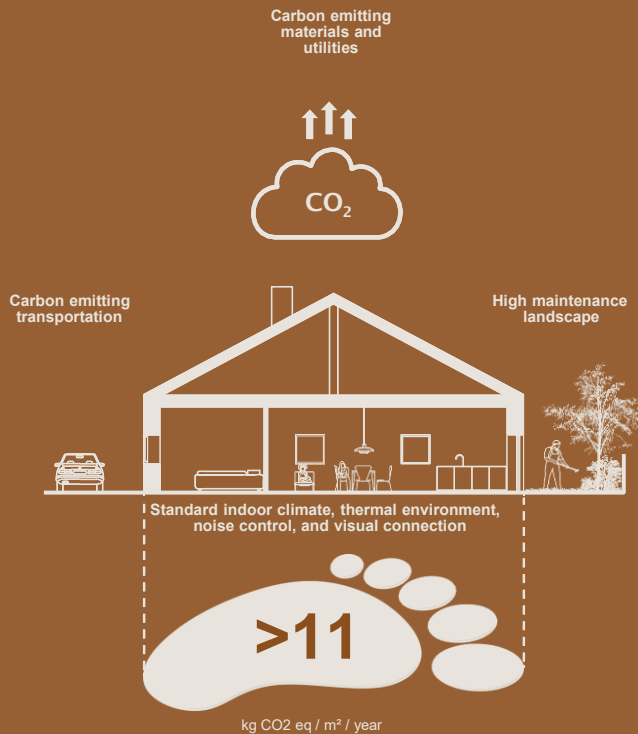
# Healthy Planet

What if we could reduce the environmental impact, while enhancing the health and wellbeing for people?

Benefiting both people and planet, through the careful selection of materials, building techniques, utilities, and design configuration of indoor and outdoor spaces.



**Environmental impact**  
of a typical single family house in Denmark



**Environmental impact**  
of the Living Places

A building that minimizes CO<sub>2</sub> emissions in operational energy

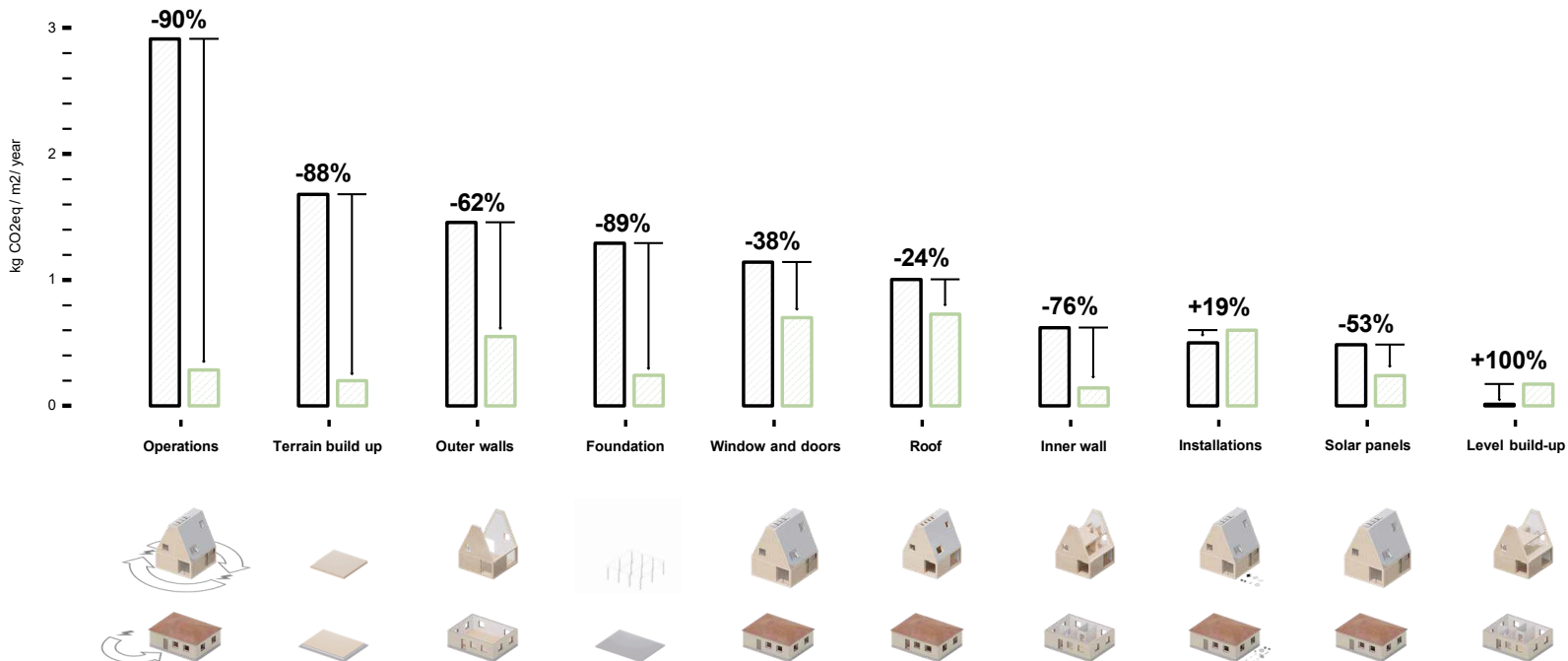


NB: The benchmark house is based on the average of the typical Danish single house and was calculated by Artelia in 2022.



## Optimization on each component

Diagram showing the comparison between each element.  
This shows where we get the biggest savings.



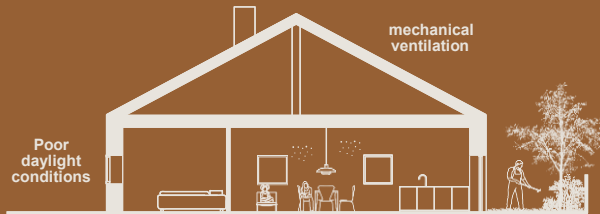
# Healthy People

What if we could reduce the environmental impact, while enhancing the health and wellbeing for people?

Benefiting both people and planet, through the use of healthy building principles. Focusing on daylight, thermal indoor environment, indoor air quality, acoustics and connections to the outdoors we ensure homes that enhance the wellbeing of people.



Health impact of a typical single family house in Denmark

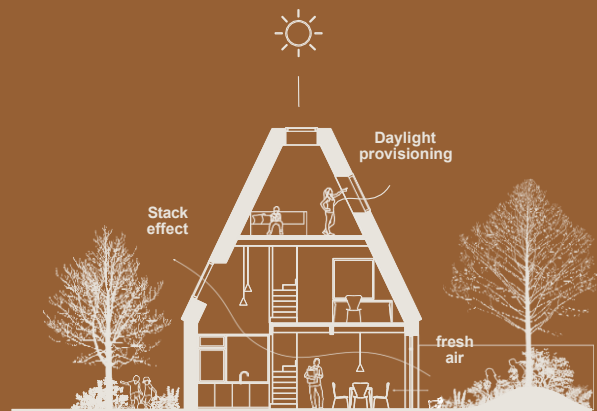


### Indoor climate class 3

The reference house's lack of healthy building principles led to a low Active House radar score, signifying a subpar indoor environment.

NB: The benchmark house is based on the average of the typical Danish single house and was calculated by Artelia in 2022.

Health impact of the Living Places



### Active house score: 1

By integrating healthy house principles, we achieve a higher Active House score and, thereby, an indoor environment that is three times better.



## Daylight How we measure

With dynamic daylight simulations it is possible to consider factors such as orientation, location, seasons and occupant requirements.

The method used is the DA300/50, a target of 300 lux at least 50% of the yearly hours.

## Targets

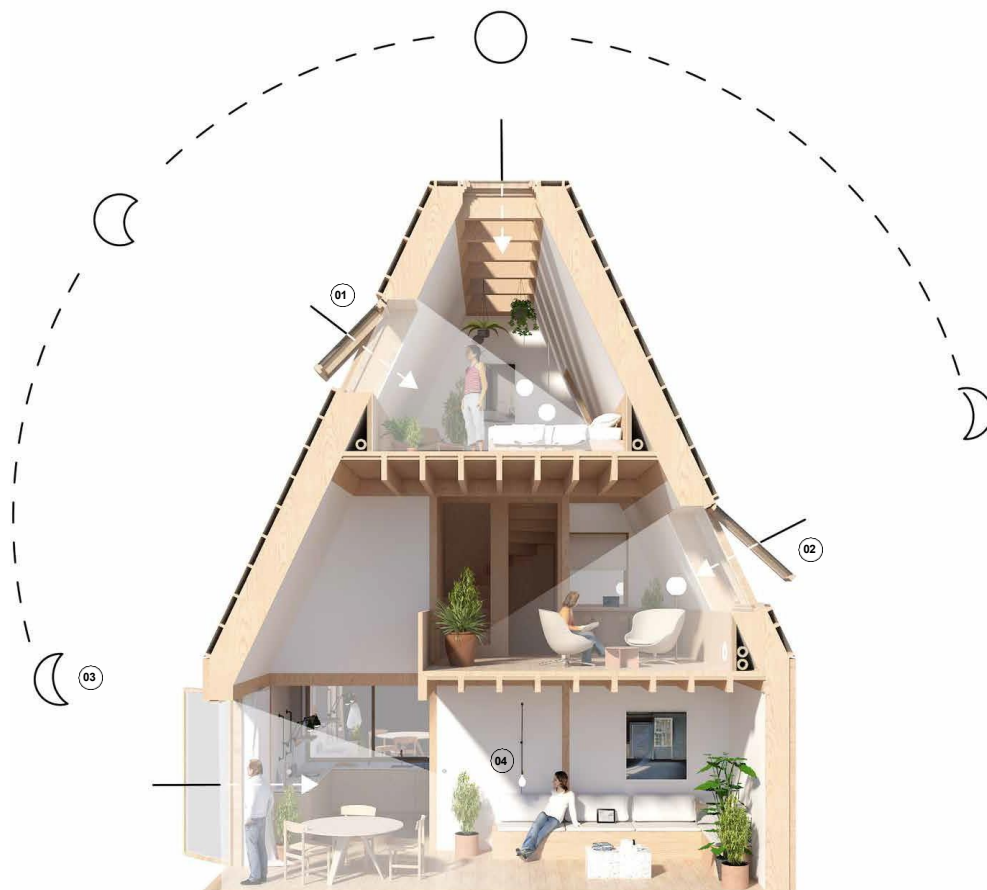
### Active House Radar



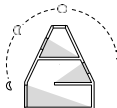

#### Daylight autonomy

1	2	3
>70%	>60%	>50%

#### Reflectance

Ceiling	Wall	Floor
0.7	0.5	0.2



- 
01 DAYLIGHT AUTONOMY
- 
02 DAYLIGHT FROM MULTIPLE DIRECTIONS
- 
03 DAYLIGHT FOLLOWING THE CIRCADIAN RHYTHMS
- 
04 GLARE AND REFLECTANCE MANAGEMENT



## Thermal environment How we measure

To identify the risk of overheating, a dynamic thermal simulation tool is used to determine hourly values of indoor operative temperature at room level.

## Targets

### Active House Radar

Max operative temperature

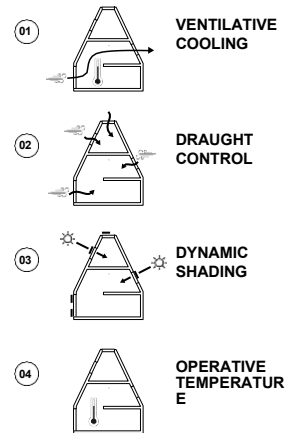
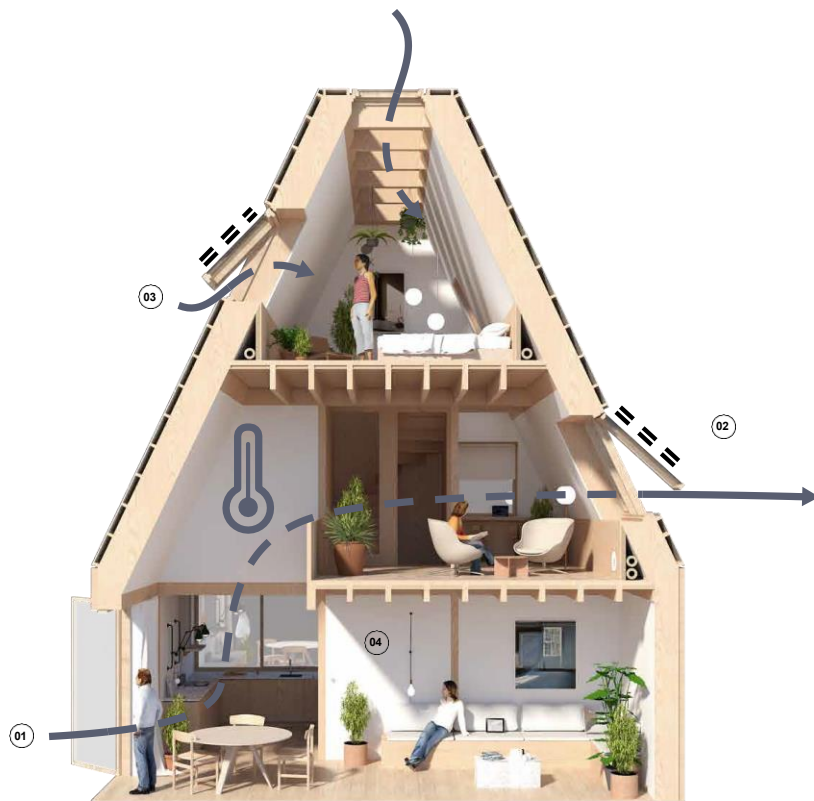
1	2	3
<25.5 °C	<26 °C	<27 °C

Min operative temperature

1	2	3
>21 °C	>20 °C	>19 °C

Air speed

Winter	Summer
0,20m/s	0,50m/s





## Indoor air quality How we measure

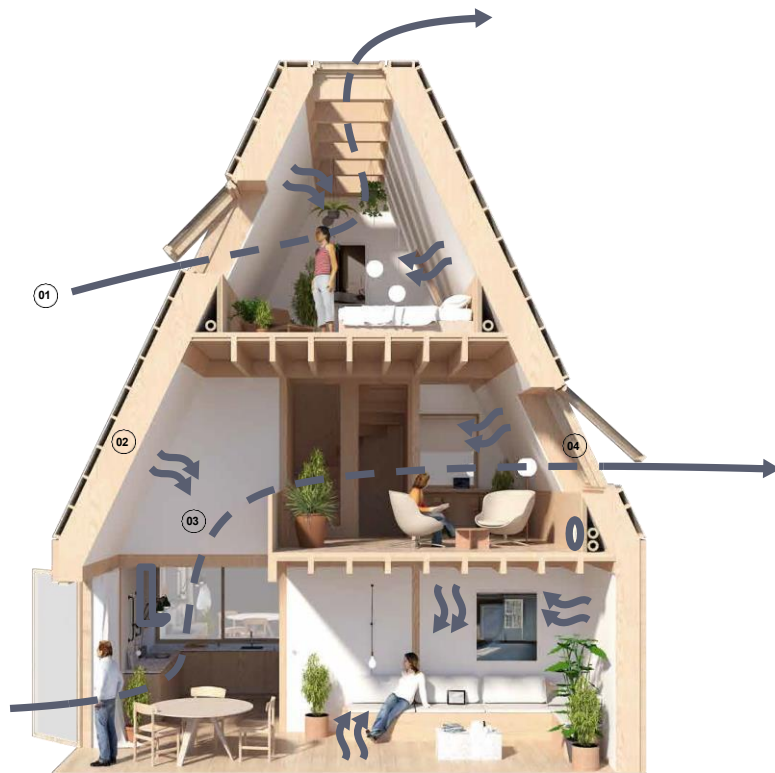
Multiple parameters define the indoor air quality, such as level of particles, Carbon dioxide, Volatile organic compounds (VOC) from materials, radon and relative humidity and mold.





## Targets

### Active House Radar

Fresh air supply (ppm CO<sub>2</sub>)

	1	2	3
	<400ppm	<500ppm	<800ppm



- 01

**FRESH AIR CONCENTRATION**
- 02

**LOW-EMITTING BUILDING MATERIALS**
- 03

**PARTICLE REMOVAL AND FILTRATION**
- 04

**DAMPNESS CROSS AND STACK VENTILATION**

# Living Places Copenhagen

In April 2023, the VELUX Group, EFFEKT, Artelia, and Enemærke & Petersen opened the doors to Living Places Copenhagen in the Railway District in Copenhagen – the first prototypes of the overall Living Places concept.

The project aims to lead the way in the building industry and show how rethinking buildings can help solve some of the global climate and health challenges.

The exhibition consists of seven prototypes – five open pavilions and two finished homes in full scale.



# The Pavilions

## 01 Resource

Practical space at Living Places Copenhagen including storage, waste management and energy harvesting from solar panels.

## 02 Hygge - timber frame Living Place

Fully functional home in timber frame with natural ventilation and wood/wood windows.

## 03 Tracks

A space for smaller meetings, events and workshops.

## 04 Materials

Exploring the materials of Living Places Copenhagen

## 05 Haven - CLT Living Place

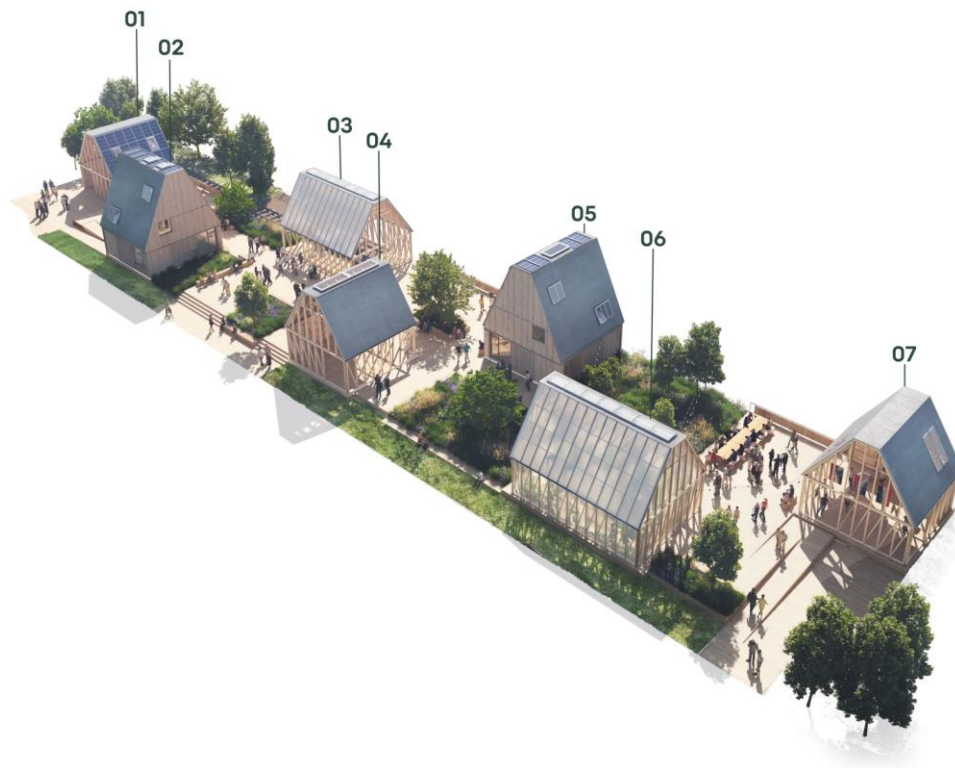
Fully functional home in cross-laminated timber (CLT) with hybrid ventilation and wood/aluminum windows.

## 06 Events

A space for events, meetings, workshops and larger gatherings.

## 07 Info

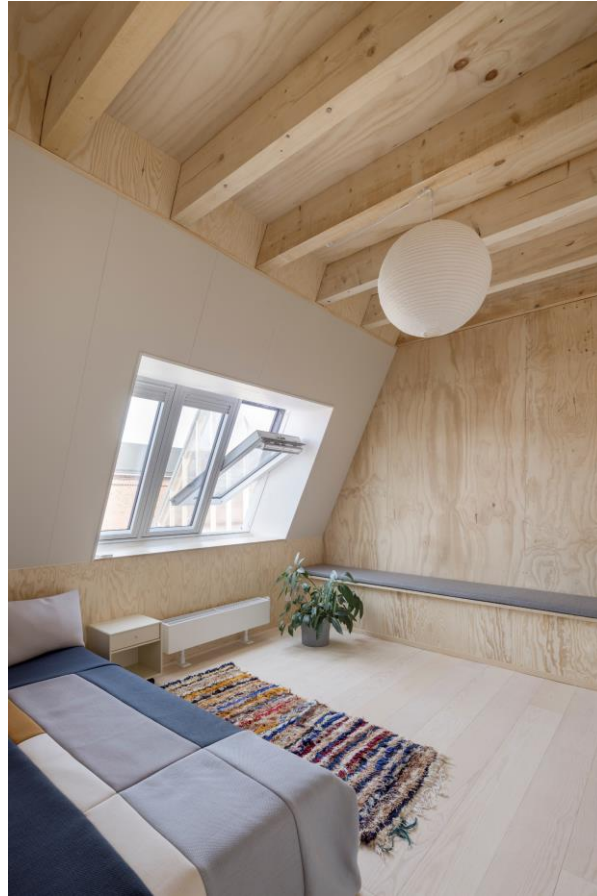
A joint exhibition space shared with Baneby Konsortiet, providing visitors information on Living Places Copenhagen and the future development of the old railway district "Jernbanebyen"













# Scaling Living Places

An important aim and aspect of the Living Places project is to scale the concept to the rest of Europe and to apply Living Places more broadly through knowledge sharing.

The VELUX Group has entered a partner agreement with the Dutch house builder Bouwgroep Dijkstra Draisma on building more sustainable housing in the Northern part of the Netherlands.

With this partner agreement, Bouwgroep Dijkstra Draisma is the first house builder to use the Living Places concept in their development and construction processes and to build the first prototype in the Netherlands based on the concept.



# Visit Living Places Copenhagen



Take a virtual tour at  
[livingplaces.velux.com](https://livingplaces.velux.com)





Transforming Spaces

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